

CCNA

200-310

PROFESSIONAL INDUSTRY TRAINING SYLLABUS

Master networking fundamentals and build the skills needed to design, implement, and troubleshoot enterprise networks.



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REAL-WORLD
PROJECTS
TO BUILD PORTFOLIC
AND PRACTICAL
SKILLS.



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WITH
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PREPARE FOR
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TO ACCELERATE YOUR
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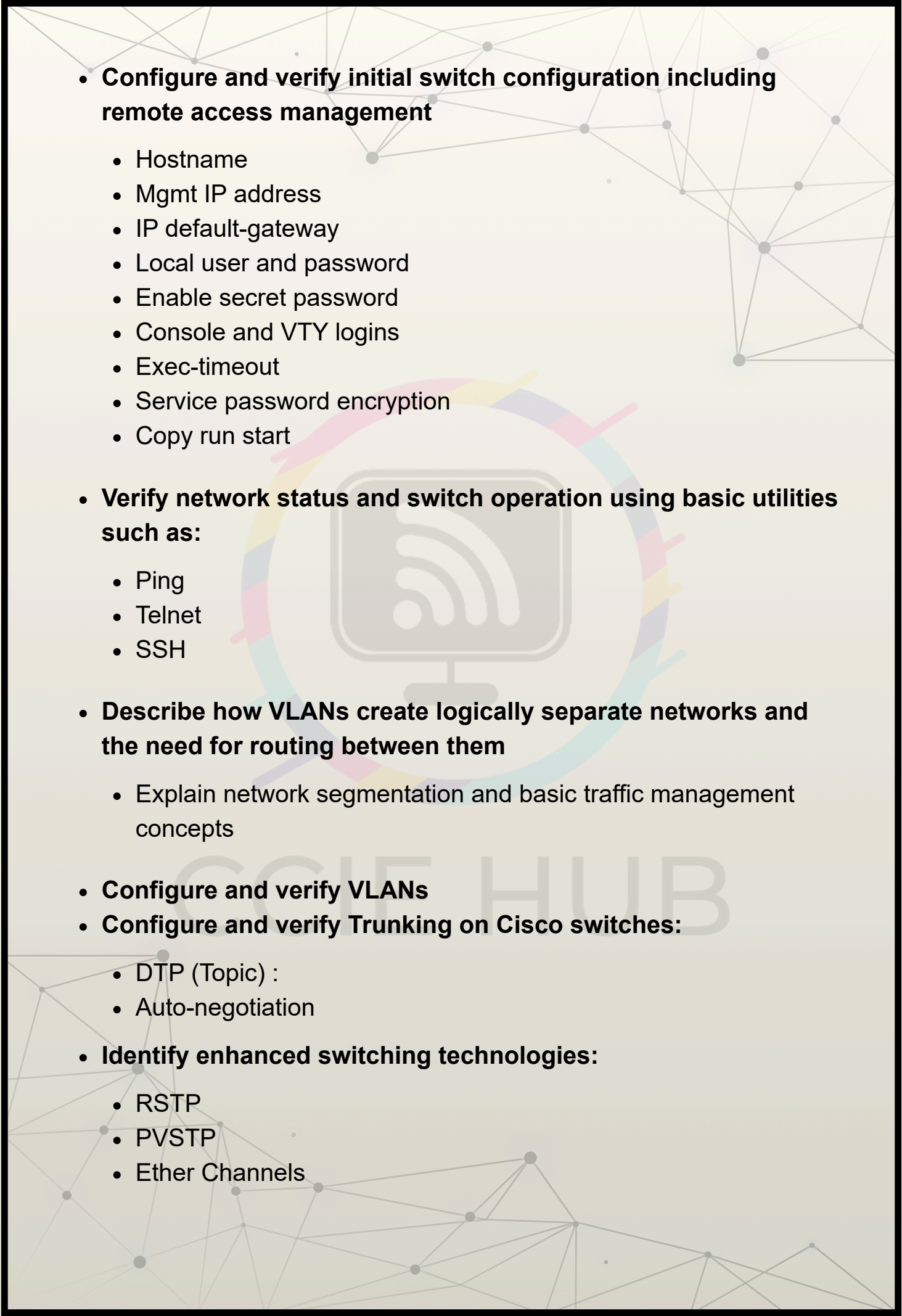
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OPERATION OF IP DATA NETWORKS

- Recognize the purpose and functions of various network devices such as routers, switches, bridges, and hubs
- Select the components required to meet a given network specification
- Identify common applications and their impact on the network
- Describe the purpose and basic operation of the protocols in the OSI and TCP/IP models
- Predict the data flow between two hosts across a network
- Identify the appropriate media, cables, ports, and connectors to connect Cisco network devices to other network devices and hosts in a LAN

LAN SWITCHING TECHNOLOGIES

- Determine the technology and media access control method for Ethernet networks
- Identify basic switching concepts and the operation of Cisco switches:
- Collision Domains
- Broadcast Domains
- Ways to switch:
 - STORE
 - FORWARD
 - CUT THROUGH
 - CAM TABLE

- 
- **Configure and verify initial switch configuration including remote access management**
 - Hostname
 - Mgmt IP address
 - IP default-gateway
 - Local user and password
 - Enable secret password
 - Console and VTY logins
 - Exec-timeout
 - Service password encryption
 - Copy run start
 - **Verify network status and switch operation using basic utilities such as:**
 - Ping
 - Telnet
 - SSH
 - **Describe how VLANs create logically separate networks and the need for routing between them**
 - Explain network segmentation and basic traffic management concepts
 - **Configure and verify VLANs**
 - **Configure and verify Trunking on Cisco switches:**
 - DTP (Topic) :
 - Auto-negotiation
 - **Identify enhanced switching technologies:**
 - RSTP
 - PVSTP
 - Ether Channels

- **Configure and verify PVSTP operation:**
- **Describe root bridge election**
- **Spanning tree mode**

IP ADDRESSING (IPV4/IPV6)

- **Describe the operation and necessity of using private and public IP addresses for IPv4 addressing**
- **Identify the appropriate IPv6 addressing scheme to satisfy addressing requirements in a LAN/WAN environment**
- **Identify the appropriate IPv4 addressing scheme using VLSM and summarization to satisfy addressing requirements in a LAN/WAN environment**
- **Describe the technological requirements for running IPv6 in conjunction with IPv4:**
 - **Dual stack**
 - **Describe IPv6 addresses:**
 - **Global unicast**
 - **Multicast**
 - **Link local**
 - **Unique local**
 - **EUI 64**
 - **Auto-configuration**

IP ROUTING TECHNOLOGIES

- **Describe basic routing concepts:**
 - **packet forwarding**
 - **Router lookup process**
 - **Process Switching / Fast Switching / CEF**

- **Configure and verify using the CLI to set basic router configuration:**
 - **hostname**
 - **local user and password**
 - **enable secret password**
 - **console & VTY logins**
 - **exec-timeout**
 - **service password encryption**
 - **interface IP address**
 - **loopback**
- **banner**
- **motd**
- **copy run start**
- **Configure and verify operation status of a device interface:**
 - **Serial**
 - **Ethernet**
- **Verify router configuration and network connectivity using:**
- **ping**
 - **extended**
- **traceroute**
- **telnet**
- **SSH**
- **sh cdp neighbors**
- **Configure and verify routing configuration for a static or default route given specific routing requirements**
- **Differentiate methods of routing and routing protocols:**
 - **Static vs. dynamic**
 - **Link state vs. distance vector**

- next hop
- IP routing table
- Passive Interfaces (how they work)
- Admin distance
- split horizon
- metric
- **Configure and verify OSPF:**
 - Benefit of single area
 - Configure OSPFv2
 - Configure OSPFv3
 - Router ID
 - Passive Interface
 - Discuss multi-area OSPF
 - Understand LSA types and purpose
- **Configure and verify inter-VLAN routing (Router on a stack):**
 - sub-interfaces
 - upstream routing
 - encapsulation
- **Configure SVI interfaces**
- **Manage Cisco IOS Files**
 - Boot Preferences
 - Cisco IOS Images
 - Licensing
 - # Show license
 - # Change license
- **Describe the types, features, and applications of ACLs:**
 - standard (editing and sequence numbers)
 - extended
 - named
 - numbered
 - Log option

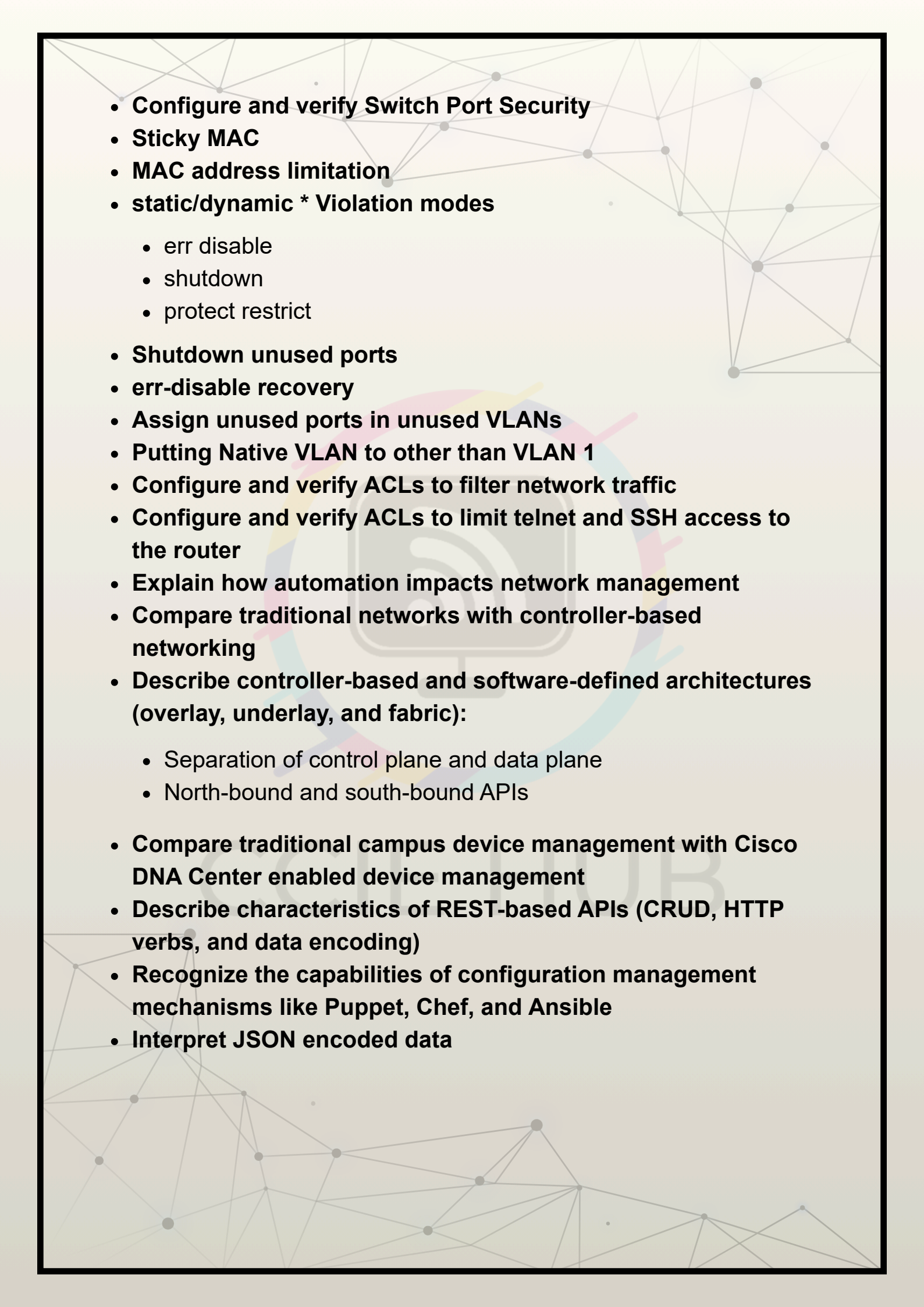
- **Configure and verify ACLs in a network environment:**
- **named, numbered, Log option**

NETWORK ADDRESS TRANSLATION (NAT)

- **Identify the basic operation of NAT:**
 - purpose, pool, static
 - 1 to 1 :- overloading
 - source addressing
 - one-way NAT
- **Configure and verify NAT for given network requirements**
- **Configure and verify NTP as a client**
- **Recognize High Availability (FHRP):**
 - VRRP, HSRP
 - GLBP
- **Configure and verify syslog:**
 - Utilize syslog output
- **Describe SNMP v2 and v3**

NETWORK DEVICE SECURITY

- **Configure and verify network device security features:**
 - Device password security
 - Enable secret vs. enable
 - Transport:
 - # disable telnet
 - # SSH
 - VTYs
 - Physical security
 - Service password
 - Describe external authentication methods

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- **Configure and verify Switch Port Security**
 - **Sticky MAC**
 - **MAC address limitation**
 - **static/dynamic * Violation modes**
 - err disable
 - shutdown
 - protect restrict
 - **Shutdown unused ports**
 - **err-disable recovery**
 - **Assign unused ports in unused VLANs**
 - **Putting Native VLAN to other than VLAN 1**
 - **Configure and verify ACLs to filter network traffic**
 - **Configure and verify ACLs to limit telnet and SSH access to the router**
 - **Explain how automation impacts network management**
 - **Compare traditional networks with controller-based networking**
 - **Describe controller-based and software-defined architectures (overlay, underlay, and fabric):**
 - Separation of control plane and data plane
 - North-bound and south-bound APIs
 - **Compare traditional campus device management with Cisco DNA Center enabled device management**
 - **Describe characteristics of REST-based APIs (CRUD, HTTP verbs, and data encoding)**
 - **Recognize the capabilities of configuration management mechanisms like Puppet, Chef, and Ansible**
 - **Interpret JSON encoded data**



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THANK YOU!

Thank you for being a part of
this **learning journey**.

Your dedication today
builds the expertise of
tomorrow.



*Keep Learning.
Keep Growing.*



**LEARN.
PRACTICE.
SUCCEED.**



KEEP LEARNING

Stay curious and
keep exploring
new possibilities.



STAY FOCUSED

Consistency today
creates excellence
tomorrow.



KEEP GROWING

Every step forward
brings you closer to
your goals.



ACHIEVE MORE

Your hard work
today shapes your
future success.

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